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UCF-237DIV

## CLEAN COPY OF ALL CLAIMS

1(Second Time Amended) A scintillator detector for high energy radiation comprising : a monocrystalline structure of cerium doped lutetium yttrium orthosilicate,  $Ce_{2x}(Lu_{1-y}Y_y)_{2(1-x)}SiO_5$  where  $x =$  approximately 0.00001 to approximately 0.05 and  $y =$  approximately 0.0001 to approximately 0.9999.

CANCEL CLAIM 2.

CANCEL CLAIM 3.

4(First Time Amended). The crystal of Claim 2 wherein  $x$  ranges from approximately 0.0001 to approximately 0.001 and  $y$  ranges from approximately 0.3 to approximately 0.8.

5(Second Time Amended). A scintillation detector assembly comprising:  
a cerium doped lutetium yttrium orthosilicate mono crystal; and,  
a photon detector coupled to said crystal said crystal when exposed to a high energy gamma ray.

CANCEL CLAIM 6.

7(First Time Amended). The detector assembly of Claim 5 wherein said mono crystal has the general composition of  $Ce_{2x}(Lu_{1-y}Y_y)_{2(1-x)}SiO_5$  where  $x =$  approximately 0.00001 to approximately 0.05 and  $y =$  approximately 0.0001 to approximately 0.9999.

8. The detector assembly of Claim 7 where in  $x$  ranges from approximately 0.0001 to approximately 0.001 and  $y$  ranges from approximately 0.3 to approximately 0.8.

9(First Time Amended). The detector assembly of Claim 5 wherein said coupled photon detector is selected from at least one of a photomultiplier tube, a PIN diode and an APD(avalanche photo detector) diode

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10 (First Time Amended). A method of detecting energy with a scintillation detector,  
comprising the steps of:  
receiving radiation by a crystal comprising cerium doped lutetium yttrium orthosilicate;  
and  
detecting photons with a photon detector coupled to the crystal.

11. The method of claim 10, wherein the step of receiving radiation includes the step of:  
receiving gamma rays.
12. The method of claim 10, wherein the step of receiving radiation includes the step of:  
receiving x-rays.
13. The method of claim 10, wherein the step of receiving radiation includes the step of:  
receiving cosmic rays.
14. The method of claim 10, wherein the step of receiving radiation includes the step of:  
receiving radiation by a monocrystalline.
15. The method of claim 10, wherein the step of detecting includes the step of:  
detecting light with a photo detector coupled to the crystal.
16. The method of claim 15, wherein the step of detecting includes the step of:  
detecting light with a photomultiplier tube coupled to the crystal.
17. The method of claim 15, wherein the step of detecting includes the step of:  
detecting light with a PIN diode coupled to the crystal.
18. The method of claim 15, wherein the step of detecting includes the step of:  
detecting light with a APD diode coupled to the crystal.

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19. The method of claim 10, wherein the crystal includes a composition of  $Ce_{2x}(Lu_{1-y}Y_y)_{2(1-x)}SiO_5$  where  $x =$  approximately 0.00001 to approximately 0.05 and  $y =$  approximately 0.0001 to approximately 0.9999.

*Be* <sup>17</sup>/<sub>20</sub> (First Time Amended). The method of claim <sup>16</sup>/<sub>19</sub>, wherein  $x$  ranges from approximately 0.0001 to approximately 0.001 and  $y$  ranges from approximately 0.3 to approximately 0.8.